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PATENT **00RE098**

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Date

Himanshu S. Amin

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Applicant(s): David W. Conrad, *et al.*

Serial No: 09/836,976

Filing Date: April 18, 2001

Examiner: Robert Siconolfi

Art Unit: 3683

Title: INTEGRAL MOTOR BRAKE MANUAL RELEASE MECHANISM

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Commissioner for Patents
P.O. Box 1450
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APPEAL BRIEF

Dear Sir:

Appellants' representative submits this brief in connection with an appeal of the above-identified patent application. A credit card payment form is filed concurrently herewith in connection with all fees due regarding this appeal brief. In the event any additional fees may be due and/or are not covered by the credit card, the Commissioner is authorized to charge such fees to Deposit Account No. 50-1063 [ALBRP211US].

I. Real Party in Interest (37 C.F.R. §41.37(c)(1)(i))

The real party in interest in the present appeal is Reliance Electric Technologies, LLC, the assignee of the present application.

II. Related Appeals and Interferences (37 C.F.R. §41.37(c)(1)(ii))

Appellants, appellants' legal representative, and/or the assignee of the present application are not aware of any appeals or interferences which may be related to, will directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims (37 C.F.R. §41.37(c)(1)(iii))

Claims 1-27 are pending in the application. Claims 1-27 stand rejected by the Examiner. The rejections of claims 1-27 are being appealed.

IV. Status of Amendments (37 C.F.R. §41.37(c)(1)(iv))

No amendments to the claims have been entered after the Final Office Action.

V. Summary of Claimed Subject Matter (37 C.F.R. §41.37(c)(1)(v))

A. Independent Claim 1

Independent claim 1 recites an electronic brake system for an electronic motor, the electronic brake system having a manual brake release, comprising: a field cup adapted to support an electromagnetic coil; an armature plate coupled to the field cup; a stationary plate coupled to the armature plate; a friction disk disposed between the armature plate and the stationary plate; a compression spring disposed between the field cup and the armature plate, the compression spring being operable to hold the armature plate and the friction disk against the stationary plate; and a lever and cam assembly that comprises a cam mounted on a lever, coupled to the armature plate and the field cup, the cam abuts the field cup and is rotatable to push the cam and lever assembly off of an interior flat annular surface of the field cup to separate the armature plate from the

friction disk. (*See, e.g.*, page 2, line 19-page 3, line 11; page 6, line 16-page 10, line 26; Figs. 2-5).

B. **Independent Claim 11**

Independent claim 11 recites a n electronic motor system having an electronic brake with a manual brake release, comprising: a motor portion surrounded by a frame; a field cup housing an electromagnetic coil and at least one compression spring, the field cup being coupled to the frame located at an opposite drive end of the motor; an armature plate coupled to the field cup; a stationary plate coupled to the armature plate; a friction disk disposed between the armature plate and the stationary plate, the compression spring being operable to hold the armature plate and the friction disk together; and a manual brake release coupled to a periphery of the field cup, the manual brake release comprises a lever and cam assembly that comprises a cam that is axially mounted on a lever, coupled to the armature plate and the field cup, the cam is rotatable to push the lever and cam assembly off of a flat annular surface of the field cup to separate the armature plate from the friction disk. (*See, e.g.*, page 2, line 19-page 3, line 11; page 6, line 16-page 10, line 26; Figs. 2-5).

C. **Independent Claim 21**

Independent claim 21 recites a method of fabricating an electronic brake system for an electronic motor, comprising: providing a field cup for supporting an electromagnetic coil; coupling an armature plate, friction disk, and stationary plate assembly to the field cup; providing at least one compression spring disposed between the field cup and armature plate, the at least one compression spring being operable to push the armature plate against the friction disk; and connecting a lever and cam assembly that comprises a cam mounted on a lever, to the field cup and the armature plate, the lever and cam assembly tilts as unit when the cam is turned to push the lever and cam assembly off of and away from a flat annular portion of the field cup to pull the armature plate away from the friction disk. (*See, e.g.*, page 2, line 19-page 3, line 11; page 6, line 16-page 13, line 4; Figs. 2-10).

D. **Independent Claim 27**

Independent claim 27 recites a manual brake release system, comprising: lever means for pulling an armature plate away from a friction disk (*see, e.g.*, Figures 5-7, reference numeral 520, and related description); cam means mounted axially on the lever means for providing a tilting action in the lever means for pulling in response to rotation of the cam means to push the cam means and lever means off of a flat annular portion of a field cup (*see, e.g.*, Figures 3-9, reference numerals 420, 520, 530, 540, 580, 590, 600, and 610, and related description); and means for rotating the cam means (*See, e.g.*, Fig 5, reference numeral 540, and related description).

VI. Grounds of Rejection to Be Reviewed (37 C.F.R. §41.37(c)(1)(vi))

A. Claims 1-27 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Marshall *et al.* (U.S. Patent No. 5,685,398) in view of McCarthy (U.S. Patent No. 4,181,201) and Hodgson (U.S. Patent No. 2,700,439).

VII. Argument (37 C.F.R. §41.37(c)(1)(vii))

A. Rejection of Claims 1-27 Under 35 U.S.C. §103(a)

Claims 1-27 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Marshall *et al.* (U.S. Patent No. 5,685,398) in view of McCarthy (U.S. Patent No. 4,181,201) and Hodgson (U.S. Patent No. 2,700,439). Withdrawal of this rejection is respectfully requested for at least the following reasons. Neither Marshall *et al.* nor McCarthy nor Hodgson, alone or in combination, teach or suggest each and every limitation set forth in the subject claims.

> To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) ***must teach or suggest all the claim limitations***. *See* MPEP §706.02(j). The ***teaching or suggestion to make the claimed combination*** and the reasonable expectation of success ***must both be found in the prior art and not based on applicant's disclosure***. *See In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (emphasis added).

The present invention relates generally to brake motors and in particular to systems and methods of using a manual brake release mechanism. Independent claim 1 recites "...a manual brake release, comprising: a field cup adapted to support an electromagnetic coil; an armature plate coupled to the field cup; a stationary plate coupled to the armature plate; a friction disk disposed between the armature plate and the stationary plate; a compression spring disposed between the field cup and the armature plate, the compression spring being operable to hold the armature plate and the friction disk against the stationary plate; and a ***lever and cam assembly that comprises a cam mounted on a lever***, coupled to the armature plate and the field cup, ***the cam abuts the field cup and is rotatable to push the cam and lever assembly off of an interior flat annular surface of the field cup*** to separate the armature plate from the friction disk." Independent claims 11, 21, and 27 recite similar

features to those of claim 1. The claimed invention mounts a rotary cam to a lever (See Figure 5), which then *directly acts upon the armature plate and field cup to which it is coupled.* Turning the camshaft results in movement of the cam and the top portion of the lever toward the friction disk, which in turn forces the bottom portion of the lever to move in an opposite direction, away from the friction disk. The cam itself is mounted on the lever (*see, e.g.*, Figure 5), so that when the handle is turned, *the entire lever/cam assembly is tilted* (*see, e.g.*, Figures 6 and 7) as the cam pushes off of a flat annular portion 420 of the field cup (*see, e.g.*, Figures 2-4). Because the bottom portion of the lever is directly attached to the armature plate/field cup assembly, the armature plate and field cup are also pulled away from the friction disk, permitting free rotation of the friction disk and the axis to which it is attached. Neither Marshall *et al.* nor McCarthy nor Hodgson, alone or in combination, teach or suggest such aspects of applicants' claimed invention.

As stated in the Reply to Office Action dated November 17, 2004, Marshall *et al.* describes an *externally mounted lever*, which, when moved in either a forward *or* rearward direction, *disengages* an armature from a friction disc. Marshall *et al.* does not teach the lever/cam assembly of the present invention. The Examiner contends, in the Final Office Action dated May 9, 2005, that only the handle of Marshall *et al.*'s lever is externally mounted, as set forth in the subject claims. However, the Examiner is respectfully directed to Column 6, lines 43-45 of Marshall *et al.*: "The release mechanism includes a manually engageable handle 312 connected to a yoke 314 having pivot-bases 316 and 318, FIG. 3, *mounted to the brake body...*" Additionally, Figures 1, 2, and 17, among others, clearly show that the lever (*e.g.*, handle 312 and yoke 314) of Marshall *et al.* is mounted on the exterior of the brake housing. Thus, mounting a cam to the Marshall lever results in a non-functional cam-lever assembly, because Marshall *et al.* does not disclose a surface off of which the cam could push to cause movement of the lever. The Examiner relies on McCarthy to introduce the cam portion of a lever/cam assembly, and further on Hodgson to introduce a lever that pushes away from a stationary surface.

McCarthy, however, fails to overcome the deficiencies of Marshall *et al.* with respect to the subject claims. As previously stated, the McCarthy structure involves a cam engaging latch arm 88 coupled to a handle 92. To manually release the brake, the

handle must be turned 90°, such that the latch arm 88 engages with a U-shaped cam portion 64 and pivots the cam portion 64 and a supporting lever 24 to release a brake shoe 46 from a frictional braking engagement with a brake disc 16. *The cam engaging latch arm 88 and handle 92 assembly is a separate structure from the cam portion 64 and the supporting lever 24*, as shown in Fig. 1 of McCarthy. Neither the cam engaging latch arm 88, the cam portion 64, nor the supporting lever 24 is coupled to an armature plate or a field cup. Combining the cam-engaging latch arm 88 and handle 92 assembly to the lever of Marshall *et al.* would merely result in a cam-engaging latch arm that pushes a lever, and not in a *cam/lever assembly wherein the cam pushes itself and the lever away from a field cup when turned.* In fact, neither Marshall *et al.* nor McCarthy, alone or in combination, discloses such a field cup 240 oriented and positioned to provide a surface 420 against which the cam-engaging latch arm 88 of McCarthy could push to effectuate movement of itself and a lever, let alone a *cam mounted directly on a lever*. The Examiner thus introduces Hodgson to teach a lever or cam that pushes off of a fixed surface.

Hodgson fails to overcome the deficiencies of Marshall *et al.* and McCarthy with respect to the subject claims. The "fixed element" off of which the Hodgson lever pushes is not an *interior flat annular surface of a field cup*, as set forth in the amended independent claims, but rather an *exterior* end of a housing. Moreover, the Examiner contends that Hodgson teaches a "cam assembly," and cites In re Gazda, 219 F.2d449, 104 USPQ 400 (CCPA 1955) as supporting a "reversal of parts" argument, which suggests that Hodgson teaches a lever that can be manipulated to cause a cam assembled therewith to separate an armature plate from a friction disk. However, the Hodgson apparatus is merely a lever with a partially rounded end affixed about a pin that functions as a fulcrum, which in turn permits the lever to pry a bar away from the exterior of the housing when manipulated. Reversal of such parts of the Hodgson device would not result in the claimed cam-and-lever assembly. Moreover, "obvious expedient" findings for reversal of operation of parts must be based on obviousness and not merely on a "mechanical rule." *See, e.g.*, In re Wright, 343 F.2d 761, 769-770, 145 USPQ 182, 190 (CCPA 1965).

Still furthermore, Hodgson is directed toward providing "an electromagnetic brake... having a *manual releasing mechanism which is automatically rendered ineffective upon energization of the magnetic coil.*" (Column 1, lines 53-56.) "In order to render the manual releasing mechanism ineffective in the event that the motor and brake are reenergized, ***the brake shown in the drawings must be mounted on the end housing*** of the motor ***so that the operating lever*** 57 as shown in the solid line position ***is pointing downwardly***. It thus becomes apparent that whenever the magnet coil 39 is energized so as to move the lamination set 33 toward set 29 ***said operating lever 57 must necessarily fall into the solid line position due to the gravitational effect thereon.***" (Column 3, lines 48-57.) Thus, it can be seen that Hodgson teaches away from mounting the operating lever 57 anywhere but on the end housing of the motor. "***A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention.***" *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984), emphasis added. A reference that teaches away from another reference may not be combined there with to form the basis of a 35 U.S.C. §103 rejection. (*See, e.g., In Re Grasselli*, 713 F.2d 731, 218 USPQ 769, 779, Fed. Cir. 1983; "It is improper to combine references where the references teach away from their combination.")

> In order to establish a prima facie case of obviousness, the teaching or suggestion to make the claim modification *must be found in the cited art*, not based on the applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Furthermore, the mere fact that the reference can be modified does not render the modification obvious *unless the cited art also suggests the desirability of the modification. In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

Combining the references in the manner suggested by the Examiner would not result in the invention as claimed. The combination of the handle 92, cam-engaging latch arm 88, and cam 60 of McCarthy and the externally mounted handle 312 and yoke 314 of Marshall *et al.* would result in a structure that, when the handle is manipulated, would turn the cam engaging latch arm, which would in turn push the lever. This is very different from the single-cam-internal-lever assembly of the claimed invention, *which is a unit* (*e.g.*, the lever

passes through the center of the cam). Furthermore, because the cam and lever assembly is a unit, the cam of the present invention does not push on the lever to effectuate release of a brake, but rather *actuation of the cam causes the cam portion of the cam/lever assembly to push the cam/lever assembly away from a separate structure--a flat, annular, internal surface 420--of the field cup 240*, which results in movement of the cam/lever assembly unit to effectuate separation of the armature plate from the friction disk. Moreover, the lever/fulcrum of Hodgson cannot be combined with Marshall *et al.* and/or McCarthy as suggested by the Examiner because Hodgson teaches away from mounting the rounded lever thereof anywhere but on the exterior of the "end housing" of the motor, as detailed above and regardless of whether the operation of the parts of Hodgson are reversed.

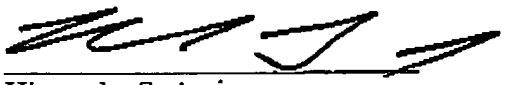
In view of at least the above, it is readily apparent that the combination of Marshall *et al.*, McCarthy, and Hodgson does not make obvious the present invention as set forth in independent claims 1, 11, 21, and 27 (and claims 2-10, 12-20, and 22-26, which depend respectively there from). Therefore, this rejection should be withdrawn.

B. Conclusion

For at least the above reasons, the claims currently under consideration are believed to be patentable over the cited references. Accordingly, it is respectfully requested that the rejection of claims 1-27 be reversed.

If any additional fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Respectfully submitted,
AMIN & TUROCY, LLP



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VIII. Claims Appendix (37 C.F.R. §41.37(c)(1)(viii))

1. (Previously Presented) An electronic brake system for an electronic motor, the electronic brake system having a manual brake release, comprising:

a field cup adapted to support an electromagnetic coil;

an armature plate coupled to the field cup;

a stationary plate coupled to the armature plate;

a friction disk disposed between the armature plate and the stationary plate;

a compression spring disposed between the field cup and the armature plate, the compression spring being operable to hold the armature plate and the friction disk against the stationary plate; and

a lever and cam assembly that comprises a cam mounted on a lever, coupled to the armature plate and the field cup, the cam abuts the field cup and is rotatable to push the cam and lever assembly off of an interior flat annular surface of the field cup to separate the armature plate from the friction disk.

2. (Original) The system of claim 1, the lever and cam assembly comprising a lever portion and a cam portion, the lever portion having a first and a second generally L-shaped end portion coupled to one another by a generally arcuate central portion, the lever portion being adapted to partially surround the field cup and coupled to the field cup at the first and second end portions, the cam portion being coupled to the lever portion at a central region of the arcuate central portion and being adapted to make contact with a surface of the field cup.

3. (Original) The system of claim 2, the lever portion being connected at a first and a second end to the field cup at a first and a second pivot point, the first and second pivot point being disposed approximately 180-degrees apart from each other, the lever portion being pivotable about the first and second pivot points in response to rotation of the cam portion resulting in tilting of the lever portion to pull the armature plate away from the friction disk and disengage the brake.

4. (Original) The system of claim 3, the lever portion of the lever and cam assembly tilting at an angle in the range of about 1 to 10 degrees.

5. (Original) The system of claim 4, the lever portion tilting at an angle of about 4 degrees.

6. (Original) The system of claim 3, further comprising a handle coupled to the cam portion, the handle being operable to rotate the cam portion.

7. (Original) The system of claim 6, the cam portion being adapted to allow the cam portion and handle to rotate between a first position and a second position.

8. (Original) The system of claim 4, the cam portion including a first position and a second position, the first position being operable to hold the lever and cam assembly in a disengaged position and the second position of the cam portion being operable to hold the lever and cam assembly in an engaged position.

9. (Original) The system of claim 8, the cam portion having a side with an angle incorporated therein, the angle being operable to hold the lever and cam assembly in the engaged position, the angle being in the range of about 1 to 8-degrees.

10. (Original) The system of claim 9, the angle being about 3 degrees.

11. (Previously Presented) An electronic motor system having an electronic brake with a manual brake release, comprising:

a motor portion surrounded by a frame;

a field cup housing an electromagnetic coil and at least one compression spring, the field cup being coupled to the frame located at an opposite drive end of the motor;

an armature plate coupled to the field cup;

a stationary plate coupled to the armature plate;

a friction disk disposed between the armature plate and the stationary plate, the compression spring being operable to hold the armature plate and the friction disk together; and

a manual brake release coupled to a periphery of the field cup, the manual brake release comprises a lever and cam assembly that comprises a cam that is axially mounted on a lever, coupled to the armature plate and the field cup, the cam is rotatable to push the lever and cam assembly off of a flat annular surface of the field cup to separate the armature plate from the friction disk.

12. (Original) The system of claim 11, the lever and cam assembly comprising a lever portion and a cam portion, the lever portion having a first and a second generally L-shaped end portion coupled to one another by a generally arcuate central portion, the lever portion being adapted to partially surround the field cup and coupled to the field cup at the first and second end portions, the cam portion being coupled to the lever portion at a central region of the arcuate central portion and being adapted to make contact with a surface of the field cup.

13. (Original) The system of claim 12, the lever portion being connected at a first and a second end to the field cup at a first and a second pivot point, the first and second pivot point being disposed approximately 180-degrees apart from each other, the lever portion being pivotable about the first and second pivot points in response to rotation of the cam portion resulting in tilting of the lever portion to pull the armature plate away from the friction disk and disengage the brake.

14. (Original) The system of claim 13, the lever portion of the lever and cam assembly tilting at an angle in the range of about 1 to 10 degrees.

15. (Original) The system of claim 14, the lever portion tilting at an angle of about 4 degrees.

16. (Original) The system of claim 13, further comprising a handle coupled to the cam portion, the handle being operable to rotate the cam portion.

17. (Original) The system of claim 16, the cam portion being adapted to allow the cam portion and handle to rotate between a first position and a second position.

18. (Original) The system of claim 14, the cam portion including a first position and a second position, the first position being operable to hold the lever and cam assembly in a disengaged position and the second position of the cam portion being operable to hold the lever and cam assembly in an engaged position.

19. (Original) The system of claim 18, the cam portion having a side with an angle incorporated therein, the angle being operable to hold the lever and cam assembly in the engaged position, the angle being in the range of about 1 to 8 degrees.

20. (Original) The system of claim 19, the angle being about 3 degrees.

21. (Previously Presented) A method of fabricating an electronic brake system for an electronic motor, comprising:

providing a field cup for supporting an electromagnetic coil;

coupling an armature plate, friction disk, and stationary plate assembly to the field cup;

providing at least one compression spring disposed between the field cup and armature plate, the at least one compression spring being operable to push the armature plate against the friction disk; and

connecting a lever and cam assembly that comprises a cam mounted on a lever, to the field cup and the armature plate, the lever and cam assembly tilts as unit when the cam is turned to push the lever and cam assembly off of and away from a flat annular portion of the field cup to pull the armature plate away from the friction disk.

22. (Original) The method of claim 21, the lever and cam assembly comprising a lever portion and a cam portion, the lever portion having a first and a second generally L-shaped end portion coupled to one another by a generally arcuate central portion, the lever portion being adapted to partially surround the field cup.

23. (Original) The method of claim 21, the step of connecting the lever and cam assembly to the field cup comprising coupling the lever to the field cup at the first and second end portions and coupling the cam portion to the lever portion at a central region of the arcuate central portion such that the cam portion makes contact with a surface of the field cup.

24. (Original) The method of claim 23, the first and second pivot point being disposed approximately 180-degrees apart from each other such that the lever portion is pivotable about the first and second pivot points in response to rotation of the cam portion resulting in tilting of the lever portion to pull the armature plate away from the friction disk and disengage the brake.

25. (Original) The method of claim 24, further comprising coupling a handle to the cam portion, the handle being operable to rotate the cam portion between a first position and a second position.

26. (Original) The method of claim 24, the cam portion including a first position and a second position, the first position being operable to hold the lever and cam assembly in a disengaged position and the second position of the cam portion being operable to hold the lever and cam assembly in an engaged position.

27. (Previously Presented) A manual brake release system, comprising:

lever means for pulling an armature plate away from a friction disk;

cam means mounted axially on the lever means for providing a tilting action in the lever means for pulling in response to rotation of the cam means to push the cam means and lever means off of a flat annular portion of a field cup; and

means for rotating the cam means.

IX. Evidence Appendix (37 C.F.R. §41.37(c)(1)(ix))

None.

X. Related Proceedings Appendix (37 C.F.R. §41.37(c)(1)(x))

None.